DOCUMENT RESUME

ED 338 158 HE 024 999

AUTHOR	Brodsky, Stanley M.
TITLE	Campus Seminars/Workshops on Strategies for Retention of Women & Minorities in Associate Degree Science & Engineering-Related Programs.
INSTITUTION	City Univ. of New York, N.Y. Center for Advanced Study in Education.
SPONS AGENCY	New York State Education Dept., Albany.
REPORT NO	CASE-14-91
PUB DATE	Oct 91
CONTRACT	CDP-152-91-1913
NOTE	65p.; For a related document, see HE 025 000.
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	*Associate Degrees; *Engineering Education; Faculty Development; *Females; Higher Education; *Minority Groups; *School Holding Power; *Science Education; Student Recruitment; Teacher Workshops
IDENTIFIERS	City University of New York Coll of Staten Island; City University of New York Hostos Community Coll; City University of New York Kingsborough Comm Coll

ABSTRACT

This report describes a program which provided on-campus seminars and workshops at the College of Staten Island, Kingsborough Community College, and Hostos Community College in New York. The program was designed to improve recruitment and especially retention of women and minorities in associate degree science and engineering-related programs. National and local indications of need were reviewed and project objectives stated. Each of the events was jointly planned with key campus personnel and configured to local needs. In each case expert presenters provided direct formal and informal communication with the participants, and specially assembled kits of materials were distributed. In addition, student/alumni panels were included in two of the seminars. Follow-up efforts in encouragement, advice, and technical assistance were provided as needed. Evaluations of the events were done using forms completed by participants. The participants (N=14, N=18, and N=24, respectively) gave the program an overall positive rating. In addition a draft document entitled "Behavioral Instructional and Departmental Strategies for Retention of College Students in Science, Engineering or Technology Programs" was distributed at each event and responses solicited. A seven-item bibliography, evaluation summaries, lists of registrants, lists of materials distributed, and summaries of the presentations and programs are included in appendixes. (JB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED338158

CAMPUS SEMINARS/WORKSHOPS ON STRATEGIES FOR RETENTION OF WOMEN & MINORITIES IN ASSOCIATE DEGREE SCIENCE & ENGINEERING-RELATED PROGRAMS

Stanley M. Brodsky, Ph.D., P.E.
Project Director

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Center for Advanced Study in Education CUNY

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

HE 024 911

Institute for Research and Development in Occupational Education
Center for Advanced Study in Education
The Graduate School and University Center
of the City University of New York

This project was performed in cooperation with the Office of Occupational and Continuing Education, Bureau of Grants Administration New York State Education Department and funded under the Carl D. Perkins Vocational Education Act Grant Award #152-91-1913.

CASE # 14-91
October 1991

BEST COPY AVAILABLE

TABLE OF CONTENTS

	Page
Abstract	iii
Acknowledgements	v
Project Need	1
National Indications of Need	1
Local Indications of Need	2
Project Objectives	7
General Objectives	7
Specific Objectives	7
Overview of the Project	8
Seminars/Workshops	9
College of Staten Island	9
Kingsborough Community College	10
Hostos Community College	10
Evaluation	11
College of Staten Island	11
Kingsborough Community College	11
Hostos Community College	11
Overall	12
Bibliography	15
Appendix A Seminars/Workshops Evaluation Summaries	17
Appendix B Seminars/Workshops Registrants	27
Appendix C Seminars/Workshops Materials Distributed	31
Appendix D Seminars/Workshops Selected Summaries of Presentations	43
Appendix E Seminars/Workshops Programs	51

CAMPUS SEMINARS/WORKSHOPS ON STRATEGIES FOR
RETENTION OF WOMEN & MINORITIES
IN ASSOCIATE DEGREE SCIENCE & ENGINEERING-RELATED PROGRAMS

ABSTRACT

This project, which continued a program begun in 1989-1990, provided on-campus seminars/workshops at three local colleges which offer associate degree science and/or engineering-related programs designed to improve recruitment and retention of women and minorities, with emphasis on retention. Teaching faculty, counselors and academic administrators comprised the participants on each campus. Each event was jointly planned with key campus personnel and was uniquely configured to the local needs and objectives which relate to the goals of this project. Expert presenters provided direct formal and informal communication with the participants and specially assembled kits of materials were distributed so that college personnel might learn about new techniques and interventions which they may apply to the local situation. In addition, student/alumni panels were included in two of the seminars which helped to focus open discussion sessions. Follow-up efforts in encouragement, advice and technical assistance were provided as needed.

ACKNOWLEDGEMENTS

Dr. Bert Flugman, Principal Investigator, and Dr. Stan Brodsky, Project Director, gratefully acknowledge the essential cooperation and support received from a number of people who helped to make this project a positive contribution to the solution of difficult educational problems.

In the New York State Education Department, Assistant Commissioner Mike Van Ryn and his colleagues Charles Graber and Michael King provided the impetus and funding through the Carl D. Perkins Vocational Education Act.

At the three cooperating colleges, local personnel were instrumental in developing the programs, disseminating information to their college communities, and seeing to many local arrangements. The key people were: at the College of Staten Island, Dean Richard Resch, Dr. Jeffrey Rothman, Dr. Sharon Bramson, Prof. John Antonopoulos, Prof. Elliot Rothkopf, Dr. Lloyd Temes, and Ms. Ann Scott; at Kingsborough Community College, Dean Thelma Malle, Ms. Loretta DiLorenzo, Dr. Joseph Muzio, Dr. Ken Neuberger, Dr. Peter Pilchman, and Dr. Rina Yarmish; at Hostos Community College, Dr. Peter Castillo, Dean Aida Ortiz-Ruiz, Dr. Gerald Meyers, Prof. Thomas Joyce, Dr. Joseph Corrigan, Dr. Victor DeLeon, and Ms. Angela Thomas.

Melanie Bentley managed the financial affairs for the project including acquisition and organization of materials while Eileen Connelly handled the correspondence, duplicating and reportage.

PROJECT NEED

National Indications of Need

Blacks, Hispanics and women are underrepresented in science and engineering occupations relative to their proportions in the population. Thus, while Blacks and Hispanics represent 12% and 7% of the U.S. population, they accounted for only 2.5% and 2.0% of those employed in science and engineering positions in 1986. Similarly, only 1 in 4 science employees and 1 in 25 engineers were women in 1986 (1).

Changes in the national labor force to the year 2000 and beyond are projected to show slower overall growth with much of the growth coming from increasing proportions of women and minorities (2).

Between 1986 and 2000, two-thirds of the growth will be women, while the proportions of Blacks in the workforce will increase to 12% from 10% and Hispanics will grow to 10% even more rapidly from only 7% in 1986. The Bureau of Labor Statistics (BLS) of the U.S. Department of Labor predicts that technicians and service occupations will grow the fastest of the broad groupings. The BLS also notes that workers in occupations with large percentages of college trained personnel will tend to be fast growing, higher paid and less likely to be unemployed (3).

Two reports of recent annual surveys of enrollments and of degrees from associate degree engineering technology programs by the Engineering Manpower Commission (EMC) of the American Association of Engineering Societies provide some interesting data. These studies report enrollments in Fall 1989 and degrees earned during the 1988-

1989 academic year (4, 5). Of the 203 institutions responding with associate degrees, 168 also reported total enrollments, 167 reported enrollments by women and 165 provided enrollment data for Black and Hispanic students. By assuming that the data across both studies represent a steady state condition, one can estimate retention rates of full-time students from first to second year and from first year to completion of degree. Thus nationally, 73% of first year students are still enrolled full-time in the second year (16,444 of 22,369 at 168 institutions) and 52% (11,629) receive degrees.

For women, 69% of the first year full-time women students (2,646 at 167 colleges) are enrolled in the second year (1,833) and 48% (1,269) receive degrees. The corresponding data for Blacks show 51% (1,370 of 2,676 at 165 institutions) and 23% (621), while for Hispanics the numbers are 67% (726 of 1,084 at 165 colleges) and 28% (309).

The slippage of these groups in pursuing associate degrees in engineering technology can also be seen by comparing proportions of total first year enrollments with proportions of total degree recipients for the institutions which provided subgroup data. Women, Blacks and Hispanics constitute 11.9%, 12.1%, and 4.9%, respectively, of the first year full-time students but only 10.9%, 5.4% and 2.7% of associate degree graduates, respectively.

Local Indications of Need

The New York State workforce is expected to follow similar trends as the nation between 1986 and the year 2000. The New York State Assembly's Program Development Group estimates that women will comprise over 75% of the State's workforce growth during that period and that "nearly all net workforce growth in New York State will come

from women and minorities." Furthermore, the New York State workforce is expected to grow even more slowly than the nation's, to have a greater decline in numbers of young workers, and to have a larger component of minority workers. These demographic changes make it likely that New York will experience greater worker and labor-skill shortages than elsewhere. In the New York area, these shortages will be exacerbated by lack of adequate transportation to job growth suburbs (6).

In an analysis of the regional economy by the Port Authority of NY & NJ, the long term outlook for the regional labor market was characterized as follows (7).

"The labor market is now adjusting to declining numbers of young people entering the work force; even if the rate of job growth slows significantly from the pace of the last ten years, the number of jobs being created will grow at a faster rate than the working age population. Regardless of the rate of job growth, the demands of the job market now require higher levels of education, literacy and computational abilities, and strong communication and problem-solving skills. Simultaneously, this job market will be increasingly relying on minorities, immigrants and women, groups that have historically been limited in their employment opportunities by low education and skills levels, limited child care and transportation options, and restricted occupational mobility."

"The increase in education and skill requirements is the result of a combination of long-term trends which appear to be intensifying: the transformation of the economy from goods-producing industries to service-producing industries, the application of new office and production technologies, and the pressures of international

competition and deregulation in some sectors. While these forces are eliminating many lower-skilled production and clerical jobs, they are increasing the demand for managerial, professional, and skilled technical occupations."

"...Future job growth will occur in occupations requiring the highest education levels. Between 1990 and 1995, jobs in the region are forecast to grow by 205,000, a more moderate level than during the mid 1980's, but still faster than labor force growth. White-collar jobs will continue to replace blue-collar jobs, a trend that became dominant in the 1970's. As in the 1980's, manager and professional jobs will grow rapidly, by 195,000, capturing a larger share of all jobs."

"...The region's economic prosperity could be threatened by the inability of employers to find enough qualified workers: employers find urban education and training systems inadequate to the task of preparing the resident labor force for even entry-level jobs; immigrants with low education levels and poor English language skills continue to comprise a substantial and increasing portion of the region's labor force; and the scarcity and high cost of housing increasingly constrains the region's ability to attract skilled labor from elsewhere in the nation. The need to upgrade the region's labor force to meet the demand for skilled, well-educated workers has now become imperative, which suggests that intensified labor force development strategies will be among the most critical challenges for the remainder of the century."

These projected workforce problems will present new opportunities since well-trained and technically educated graduates may be expected to be flexible, mobile and in great demand.

The EMC studies noted above permit estimates of persistence and graduation rates in associate degree programs at colleges in the New York City metropolitan area. Unfortunately, not all local institutions have reported enrollments and degrees for Black and Hispanic students and some have not provided data for women students.

Within the limitations noted, in 9 local institutions, 59% of first year full-time students are enrolled in the second year and 30% earn degrees, compared with national proportions of 73% and 52%, respectively.

Eight local institutions providing data for women students show that 58% make it to the second year from the first year while only 28% earn degrees.

Minority student data from these 8 local institutions show that for Black students, 54% of the first year full-time associate program engineering technology students enroll in the second year but only 20% receive degrees, while for Hispanics the corresponding data are 62% and 22%.

Local results compared with previously cited national data show that fewer local women are retained to the second year (58% vs. 69%) and many fewer graduate (28% vs. 48%). For Hispanics, somewhat fewer reach the second year (62% compared to 67%) and graduate at lower rates (22% vs. 28%). Similar data for Black students show local rates equivalent to national proportions (54% vs. 51% to second year and 20% vs. 23% graduating). Note that local retention rates for minorities are similar to national results even though most local colleges have open admission policies whereas many colleges elsewhere screen their applicants using high school grades and standardized test scores.

Regardless of the lack of precision, it is apparent that improving retention of women and minorities in engineering technology and other mathematics and science based programs in local colleges is an important priority. Recruitment efforts are also needed to increase the proportion of women attracted to these programs. First year full-time enrollments in associate degree engineering technology programs are comprised of only 11.9% women nationally and 9.0% locally. Special attention needs to be paid to early pre-college programs as well as to high school groups to reduce the underrepresentation of women in these programs and the occupations which stem from them. Although Blacks and Hispanics attend most local institutions in greater proportions than are found nationally, recruitment efforts need to be focused on ensuring adequate preparation for engineering-related studies in critical subjects, such as mathematics. Here again, pre-college programs and guidance will be important. In addition, accurate information needs to be disseminated to high school and junior high school students and their parents about careers which are associated with these programs.

It is apparent that the problems of underrepresentation of women and minorities in science and engineering occupations are complex and variant. Many institutions have to learn how to attract more women and minority students to the "hard" sciences and technologies, which are still relatively non-traditional areas for both groups. Those institutions with large minority student enrollments need to do a better job of retaining students who have the potential to complete these demanding programs as well as accurately counseling parents and students in advance of registration. Colleges which succeed in attracting substantial numbers of women to science and engineering-

related programs need to be sensitive to the special concerns of women students. Techniques for both recruitment and retention have been developed which have been shown to improve enrollments and completion rates. This project has provided participants with direct access to experts and information emphasizing problem-solving techniques which can be adapted to the local scene.

PROJECT OBJECTIVES

General Objectives

This project was designed to meet the following general objectives:

1. To bring and interpret to the participants recent research findings, demographic trends and successful experiences applicable to recruitment and retention of women and minorities in science and engineering-related associate degree programs, with emphasis on retention.

2. To encourage participants to exchange information about their experiences regarding recruitment and retention of women and minorities in such programs for the purpose of identifying additional innovative problem-solving approaches.

3. To provide participants with encouragement and incentives to share materials and ideas with others in their departments and to develop or enhance activities related to this project.

Specific Objectives

Within the framework of the general objectives, the following specific objectives helped to define the project scope and orientation:

1. To select three colleges in the local region of New York State which offer associate degrees in science and/or engineering-related programs as sites for seminars/workshops.

2. To design an intensive on-campus seminar/workshop jointly with key personnel at each college for approximately 20 participants in a format which will attract teaching faculty, counselors, and academic administrators from target departments; a total of 60 in all.

3. To have each participant learn about techniques or interventions which they may use in improving either recruitment or retention of women and minority students at their college.

4. To provide participants with direct access to project experts in formal sessions and informal small group discussions.

5. To provide technical advice and assistance within the project period, as requested, in developing and implementing activities stemming from this project.

OVERVIEW OF THE PROJECT

There were three disctinct phases of this project: pre-workshop phase, workshop phase, and follow-up phase.

In the first phase, three cooperating colleges were selected and local contact persons identified. Individual series of meetings with local key personnel determined the particular events which were preferred by each college. Dates were established, facilities secured, speakers identified, and advertising prepared and disseminated. In each case, supplementary workshop materials were selected by speakers and staff, duplicated and assembled into kits

for dissemination to participants.

The second phase consisted of seminars/workshops in a variety of formats according to local institutional preferences and involved 86 college participants.

In the third phase, communication with the local contact persons indicated that retention-related activities would be continuing although there were no formal requests for technical assistance thus far.

SEMINARS/WORKSHOPS

Lists of registrants, materials distributed, summaries of selected presentations, and copies of programs can be found in Appendixes B, C, D, and E, respectively.

College of Staten Island

A workshop on Strategies for Retention was held on Tuesday, January 22, 1991 at the college's Sunnyside campus. Dr. Eleanor Baum, Dean of Engineering, Cooper Union, spoke on "The Teacher's Role in Retention" and Prof. Norman Metzger, Edmond A. Guggenheim Professor of Health Care Management Emeritus, Mount Sinai School of Medicine presented "From Control to Commitment: Another View of Retention." After small groups sessions at lunch with the presenters, Dr. Lloyd M. Cooke, President, LMC Associates, discussed "Design for Retention: Helping Students Study Smartly." Dr. Elsa Nunez-Wormack, Dean for Freshman Programs at the college added important insights from her experiences. A variety of handouts by the speakers were incorporated into an extensive kit of resource materials which were distributed to the 24 participants and 9 others

who had pre-registered but were unable to attend.

Kingsborough Community College

A seminar on Retention of Women & Minorities was attended by 18 participants on Tuesday, April 16, 1991 at the college's Manhattan Beach campus in Brooklyn, New York. Dean Thelma Malle set the tone with most relevant opening remarks. Dr. Eleanor Baum, Dean of Engineering, Cooper Union, spoke on "The Teaching Faculty's Role in Retention" and Dr. Cecily Cannan Selby, Professor of Science Education, New York University, presented "Science & Technology Strategies for Inclusion, Not Exclusion." A lively Student/Alumni Panel was moderated by Dr. Joseph Muzio, Professor & Chair, Physical Sciences and included two students, Koyona Langely and Elaine Williams, and one alumna, Judy Hugo. An extensive kit of resource materials was distributed to the participants.

Hostos Community College

A seminar on Strategies for Student Retention was held on Wednesday, June 12, 1991 at the college's Grand Concourse campus in the Bronx, New York. President Isaura Santiago Santiago keynoted the seminar with pertinent opening remarks. Dr. Peter Castillo, Professor and Chair of Natural Sciences, served as moderator and was assisted by Dr. Gerald Meyers of Social Sciences. Dr. Alberto Guzman, Associate Professor of Mathematics and Director of the Resource Center for Science & Engineering, The City College, spoke on "Retention Programs Actual & Potential." Dr. Lester Jones, Professor of Mathematics, Xavier University, New Orleans, discussed "Triple S: A Retention Program Coupled With High Academic Standards." Prof. Thomas Joyce moderated a Student/Alumni Panel in which two current students and one alumna discussed their experiences at Hostos

Community College. The group broke into smaller seminar sessions during lunch. An evaluation period and summary session led by Dr. Stan Brodsky of CASE closed the program.

EVALUATION

Summaries of evaluation forms completed by participants are shown in Appendix A.

College of Staten Island

Of the 24 participants who attended the workshop at the College of Staten Island, 17 submitted completed evaluation forms. All three speakers were very well received by the respondents. In response to the question "How would you rate each of the presentations?" the combined results for the three were 88% "excellent" and 12% "good" on a four point Likert scale. The question "What is your overall rating of the workshop?" resulted in 71% "excellent" and 29% "good" responses.

Kingsborough Community College

The 18 participants who attended the seminar at Kingsborough Community College were very favorably impressed by the presentations as evidenced by their questions and discussion which followed each of the segments. Unfortunately, only 4 returned completed evaluation forms on which 3 (75%) gave the seminar an overall rating of "excellent" and 1 (25%) rated it as "good".

Hostos Community College

Of the 55 pre-registrants, 44 attended the Hostos seminar. The 33 participants who returned evaluation forms clearly preferred one of the presenters, giving him a 91% "excellent" rating while giving

the other a 53% "excellent" rating. Nevertheless, the question "What is your overall evaluation of the seminar?" resulted in 90% "excellent" ratings.

Overall

In addition to these outcomes, a draft document entitled "Behavioral Instructional & Departmental Strategies for Retention of College Students in Science, Engineering or Technology Programs" prepared by the Project Director was distributed at each seminar/workshop for comment. Valuable suggestions were received and a final publication will be released shortly.

This year's activities completes a three year cycle of seminars/workshops and conferences which involved more than 300 participants and presenters. In 1988-1989, two city-wide conferences were conducted at the City University of New York Graduate School, one focused on recruitment and the other on retention of women and minorities in associate degree technical programs. Over the last two years, 1989-1991, six campuses were sites of seminars/workshops in a variety of formats in an effort to reach more of those faculty who might not attend an off-campus conference/workshop. While it appears that there is no single format which works best, there are certain elements which are positive ingredients and which facilitate faculty attendance. These include: 1) initial planning with key representatives of potential participants, 2) one or more authoritative presentations by recognized experts, including recent research findings and practical techniques which have been found to be effective, 3) distribution of resource materials which will be recognized by participants as useful for retention and/or recruitment, 4) a selected student/alumni panel which can stimulate

useful discussion by faculty participants, 5) opportunities for small group discussion and sharing experiences with key personnel, and 6) appropriate refreshments. An effective seminar/workshop will use combinations of some of these elements. Other factors which may affect program success include 1) selection of time and date when target groups will be likely to attend, 2) professional and attractive advertising brochure with on-campus pre-registration encouraged, 3) suitable and comfortable space for plenaries and small groups, and 4) appropriate budget support.

BIBLIOGRAPHY

1. Women and Minorities in Science and Engineering, National Science Foundation, NSF 88-301, Washington, D.C., January 1988.

2. Johnson, William B., and Arnold E. Packer, Workforce 2000: Work and Workers for the Twenty-First Century, U.S. Department of Labor, Hudson Institute, Indianapolis, June 1987, pp. 75-76.

3. "Projections 2000", Occupational Outlook Quarterly, U.S. Department of Labor, Bureau of Labor Statistics, Vol. 31, No. 3, Fall 1987.

4. Engineering & Technology Enrollments Fall 1989, Part II Technology, Engineering Manpower Commission of the American Association of Engineering Societies, Inc., Washington, D.C., 1990.

5. Engineering & Technology Degrees 1988-1989, Engineering Manpower Commission of the American Association of Engineering Societies, Inc., Washington, D.C., 1989.

6. Workers and Jobs in the Year 2000: New York State vis-a-vis the Nation, New York State Assembly, Program Development Unit, Albany, New York, November 1988.

7. The Regional Economy: Review 1987, Outlook 1988 for the New York-New Jersey Metropolitan Region, The Port Authority of NY & NJ, Regional Economic Analysis Division, March 1988, pp. 35-36.

APPENDIX A

SEMINARS/WORKSHOPS EVALUATION SUMMARIES

		Page
College of Staten Island	January 22, 1991	18
Kingsborough Community College	April 16, 1991	21
Hostos Community College	June 12, 1991	23

24 ATTENDED
N = 17 RESPONSES

The Graduate School and University Center
of The City University of New York

Center for Advanced Study in Education
Institute for Research and Development in Occupational Education
33 West 42 Street, New York, N.Y. 10036
212 642-2942 FAX 212 719-2488

WORKSHOP ON STRATEGIES FOR RETENTION
at College of Staten Island -- 1-22-91

EVALUATION

Please check ONE of the responses to each of the following items.

1. How would you rate each of the presentations?

A. "The Teacher's Role in Retention"

15 excellent 2 good ____ adequate ____ poor

B. "From Control to Commitment: Another View of Retention"

14 excellent 3 good ____ adequate ____ poor

C. "Design For Retention: Helping Students Study Smartly"

13 excellent 1 good ____ adequate ____ poor

Comments on any of the presentations (please indicate which): 7 COMMENTED

2. How would you rate the workshop lunch small group discussion session?

3 excellent 11 good 3 adequate ____ poor

Comments: 4 COMMENTED

3. How would you rate the take-home kit materials for your purposes?

10 excellent 6 good ____ adequate ____ poor

Comments: 3 COMMENTED

4. What is your overall rating of the workshop?

12 excellent 5 good ____ adequate ____ poor

Comments: 7 COMMENTED

WORKSHOP ON STRATEGIES FOR RETENTION
AT COLLEGE OF STATEN ISLAND
January 22, 1991

Evaluation Comments

Item 1. How would you rate each of the presentations.

4. All of the presenters contributed a wealth of knowledge to the discussion. All brought their own sense of style. Much enjoyed.

7. Dr. Baum as she commented, faculty who need this workshop did not attend. Aiso, with our budgeting crisis, students who fail a nursing course do not have the opportunity to repeat and possibly succeed. Dr. Metzger on need for respect and caring for staff.

8. Content very appropriate to health professionals and teachers of students in this area. I agree that those who would have benefitted from today's presentation were absent unfortunately!

11. All had positive information for me.

13. A and B excellent in form, but in less substance than C.

15. A--Dynamic, good enthusiastic lecturer.
B--Dynamic, entertaining; likes himself and his topic.
C--Dynamic, in a quiet, methodical manner.

16. Superb job - very informative and all speakers presented in a very stimulating manner.

Item 2. How would you rate the workshop lunch small group discussion session?

3. Focus on future health care and how cultural background can cloud the teacher's ability to be effective.

4. Discussion lacked direction.

7. Should be more structured, e.g., representatives from different diciplines in group.

15. Always find smaller groups easier for prompting questions.

Item 3. How would you rate the take-home materials for your purpose?

4. Can't wait to read through materials.

11. Haven't read material yet. Looks good.

13. Have not really seen it yet.

Item 4. What is your overall rating of the workshop?

2. Could have included a concrete group and/or individual tasks directly focused on a retention problem at a current work site. It would have been nice to have actually experienced something like brainstorming to make it a real immersion workshop. (rating = excellent).

3. Good variety of topics applicable to private business. Interesting scenarios and information offered. Thank you. (rating = excellent).

6. More participation in discussion needed. (rating = excellent).

12. The workshop offered many opportunities to open up our manner of teaching to all cultures. (rating = excellent).

13. Your method of studying--used it while a student. Have recommended it to my students at CSI. Will put more emphasis on it in future. (rating = excellent).

15. Wish this seminar was a requirement for all teachers, educators, enablers. (rating = excellent).

16. Great job. Look forward to next one. (rating = excellent).

The Graduate School and University Center
of The City University of New York

Center for Advanced Study in Education
Institute for Research and Development in Occupational Education
33 West 42 Street, New York, N.Y. 10036
212 642-2942 FAX 212 719-2488

N = 4 RESPONSES
18 ATTENDED

SEMINAR ON RETENTION
at Kingsborough Community College -- 4-16-91

EVALUATION

Please check ONE of the responses to each of the following items.

1. How would you rate each of the presentations?

A. "The Teaching Faculty's Role in Retention"

2 excellent 1 good ____ adequate ____ poor

B. "Science & Technology Studies: Strategies For Inclusion, Not Exclusion"

3 excellent ____ good ____ adequate 1 poor

C. The Student/Alumni Panel

2 excellent 1 good 1 adequate ____ poor

Comments on any of the presentations (please indicate which): 2 COMMENTED

2. How would you rate the take-home kit materials for your purposes?

3 excellent ____ good 1 adequate ____ poor

Comments: 1 COMMENTED

3. What is your overall rating of the seminar?

3 excellent 1 good ____ adequate ____ poor

Comments: 2 COMMENTED

SMB -- CASE/CUNY

RETENTION OF WOMEN & MINORITIES SEMINAR
AT KINGSBOROUGH COMMUNITY COLLEGE
April 16, 1991

Evaluation Comments

Item 1. How would you rate each of the presentations?

1. Very pleasantly surprised.

2. B--No strategies were outlined. Speech was not well organized.
   C--Insights from the students' perceptions were invaluable to a teacher at a 2-year college.

Item 2. How would you rate the take-home list materials for your purpose?

2. Looks OK.

Item 3. What is your overall rating of the seminar?

3. More of these workshops/seminars are needed. (rating = excellent).

4. Except for student panel. A better choice of students . . .could have been made. (rating = excellent)

Center for Advanced Study in Education
of the City University Graduate School

N = 33 RESPONSES

Seminar on Strategies for Student Retention
at Hostos Community College on June 12, 1991

44 ATTENDED

PARTICIPANT'S EVALUATION FORM

1. How do you evaluate the keynote presentations:
   A. "Retention Programs, Actual & Potential" by Dr. Guzman

   Excellent 17 Good 13 Adequate 2 Poor ___

   B. "Triple S: A Retention Program Coupled With High Academic Standards" by Dr. Jones

   Excellent 30 Good 3 Adequate ___ Poor ___

COMMENTS ON EITHER A or B: 13 COMMENTED

2. How do you evaluate the Student/Alumni Panel?

   Excellent 11 Good 14 Adequate 3 Poor ___

COMMENTS: 8 COMMENTED

3. How do you evaluate the Small Group Session?

   Excellent 4 Good 8 Adequate 1 Poor ___

COMMENTS: 3 COMMENTED

4. How do you evaluate the kit of take-home materials?

   Excellent 15 Good 7 Adequate ___ Poor 1

COMMENTS: 3 COMMENTED

5. What is your overall evaluation of the seminar?

   Excellent 26 Good 3 Adequate ___ Poor ___

COMMENTS: 10 COMMENTED

June 1991 SMB

SEMINAR ON STRATEGIES FOR RETENTION
AT HOSTOS COMMUNITY COLLEGE
June 12, 1991

Evaluation Comments

Item 1. How do you evaluate the key note presentations?

1. A--Presentation schematic.
   B--Excellent breakdown of working strategies.

2. B--Dr. Jones' presentation was very interesting.

5. B--Not much information about entrance characteristics such as learning styles and modifications produced by the program.

6. B--Very informative.

15. They had good ideas explained clearly.

16. B--Overheads by Dr. Jones were--I could read them. Wonderful, lively discussion by Dr. Jones.

22. Very good exposition.

23. Very good programs--good planning and implementing.

24. Both were very informative. They were able to hold my attention and they handled questions very well.

27. B--Dr. Jones gave excellent information on his school's curriculum, which may be able to be implemented at Hostos.

30. B--Informative, well-organized, but lacking in sufficient printed material for resource purposes.

31. B--Dr. Jones' remarks were particularly lively and inspiring; gave some very tangible and useful suggestions.

32. B--It's quite enjoyable and a plus when you are met by a presenter who's both intelligent and charismatic. The information was received excellently.

Item 2. How do you evaluate the Student/Alumni Panel?

14. It would be very interesting to hear from an African-American and Hispanic-American student.

21. Needed representation from Hispanics and black Americans as well as alumni.

23. They spoke from the heart--honest and constructive--gave important reasons for staying at Hostos--effective.

24. The students were great; they were informative in pointing out what needs to be changed and the expectation.

27. Students shared their personal experiences at Hostos with audience.

28. Why were there no Hispanic students and where were the graduates--there should have been more than one.

30. Students were organized and presented both positive and negative aspects of their experiences.

32. The students were able to articulate well their concerns and overall motivation to complete their studies.

Item 3. How do you evaluate the Small Group Session?

24. Shared ideas will produce better quality of services.

25. It will be a good thing if the students are working together.

31. Did have a chance for discussion at lunch--could have been more structured.

Item 4. How do you evaluate the kit of take-home materials?

5. Dr. Brodsky's paper is very good. I was expecting to hear about those ideas.

24. Very informative.

28. Seems to be good.

Item 5. What is your overall evaluation of the seminar?

6. Much to be applied where possible at Hostos. (rating = excellent).

7. Great. (rating = excellent).

11. The student panel should have a Spanish-speaking student who could express her feelings--also an Afro-American student. (rating = excellent).

15. Plan earlier in the semester. Interesting, thought-provoking presentations. (rating = excellent).

23. I have been made more aware of the importance of retention. It has impressed upon me to get more involved. (rating = excellent).

24. Look forward to attending the next seminar. (rating = excellent).

25. We should have these more often. (rating = excellent).

28. Maybe the small group sessions should have done this but we need more people's reflections/reactions. Everyone should write their comments and circulate them. How do we share? Keep going? (no rating).

30. Very good. (rating = adequate).

32. Highly professional--appealing. (rating = excellent).

APPENDIX B

SEMINARS/WORKSHOPS REGISTRANTS

		Page
College of Staten Island	January 22, 1991	28
Kingsborough Community College	April 16, 1991	29
Hostos Community College	June 12, 1991	30

Faculty Workshop on Strategies for Retention
on Tuesday, January 22, 1991 at the College of Staten Island

Pre-Registration & Attendance List

*John Antonopoulos, Professor & Chair, Mechanical Engineering Technology, CSI
*Dr. Sharon Bramson, Professor & Coordinator, Medical Lab Technology, CSI
*Anita Burstein, St. Vincent's Hospital
*Lucille Cichminski, St. Vincent's Hospital
*Irma Cusumano, Supervisor, Blood Bank, St. Vincent's Hospital
*Irene DeNave, Professor, Nursing Department, CSI
Dr. Yigal Ehrlich, Center for Developmental Neuroscience, CSI
*Dianne Errichetti, St. Vincent's Hosital
*Naomi Greenberg, Director, Health Careers Opportunity Program, LaGuardia C.C.
*Maureen Howard, St. Vincent's Hospital
*Genevieve Jensen, St. Vincent's Hospital
*Barbara Killride, Staten Island University Hospital
Dr. Aaron Lukrec, St. Vincent's Hospital
*Sister Mary Martin, School of Nursing, St. Vincent's Hospital
*Elizabeth McMorrow, School of Nursing, St. Vincent's Hospital
Prabudh Ram Misra, Professor, Mathematics Department, CSI
Richard Modderno, Laboratory Supervisor, Doctor's Hospital
Thomas Neglia, Staten Island University Hospital
*Patricia Nolan, Staten Island University Hospital
*Dr. Elsa Nunez-Wormack, Associate Dean for Freshman Programs, CSI
*E. Wilson Okyere, Professor, Electrical Technology Department, CSI
*June Olsen, Professor, Nursing Department, CSI
*Kathleen Pappas, Adjunct Lecturer, Nursing Department, CSI
Arthur Philips, Supervisor, Blood Bank, Staten Island University Hospital
*Dr. Richard I. Resch, Dean of Science & Technology, CSI
*Elliot Rothkopf, Professor, Electrical Technology Department, CSI
*Dr. Jeffrey Rothman, Professor & Director of Health Sciences, CSI
Truman Springer, Occupational Therapy Department, LaGuardia Community College
*Dr. Lloyd Temes, Professor & Chair, Electrical Technology Department, CSI
*Joseph Vagvolgyi, Professor, Biology Department, CSI
Rosemarie Videla, Director, Physician Assistant Training Program, Bayley Seaton Hospital
*Emil Wildman, Professor, Chemistry Department, CSI
Mohamed Yousef, Professor, Mechanical Technology Department, CSI

*Denotes attendance at the workshop.

KINGSBOROUGH COMMUNITY COLLEGE
of the City University of New York

Retention of Women & Minorities Seminar
April 16, 1991

Attendees

Carol Biermann, Biological Sciences
Harvey Carroll, Physical Sciences, Engineering Science Program
Isabella Caruso, English, ESL Program
Loretta DiLorenzo, Assistant to the Provost
Helen Gerardi, Health Education
Miles Goodman, Physical Sciences, Chairperson
Louise Jaffe, English
Miriam Kittrell, Biological Sciences
Rachel Lieff, Mathematics and Computer Science
Thelma Malle, Dean of Open Admissions & Special Programs
Inez Martinez, English
Thomas Meeks, Physical Sciences
Joseph Muzio, Biological Sciences, Chairperson
Manuel Pomales, Student Development
Barbara Sadownick, Student Development
Leona Waxman, Special Services
Rina Yarmish, Mathematics and Computer Science
Michael Zibrin, Vice President and Provost

PRE-REGISTRANTS & ATTENDEES AT SEMINAR ON STRATEGIES FOR RETENTION
AT HOSTOS COMMUNITY COLLEGE ON JUNE 12, 1991

1.	Felicita Alomar	Recruitment	29.	Ricardo Lopez	Math
2.	Ivette Alonzo	Dn of Stud Off	30.	Carmen Marin	Humanities
3.	Dr. V. Alvarez		31.	Pat Marry	Recruitment
4.*	Melba Amaro	Career Services	32.	Mary McGillicuddy	Nursing
5.	Dean Benitez	Dean of Students	33.	Gerald Meyer	Soc Sciences
6.*	Louis Browne	Biology	34.	Sabina Modesta	Student
7.	Peter Butler	Tutor VEA	35.*	Judith Nowinsky	Modern Lang
8.	Tony Butler	Tutor VEA	36.*	Angel Ortiz	Career Servs
9.*	Diosa Carmona	English	37.	Nilson Padilla	Career Servs
10.	Peter Castillo	Physical Sci	38.	Dean Paris	Dn of Studts
11.	Yvonne Collins	Biology	39.*	Loreto Porte	Math
12.*	Lizette Colon	Counseling	40.	Gladys Pozo	Biology
13.	Joseph Corrigan	Physical Sci	41.*	Barbara Radin	English
14.	Susie Cruz	Recruitment	42.	Manny Ramos	
15.	Steve Darrup	Tutor VEA	43.*	Marta Rivera	Student Servs
16.	Leontina Diaz	Math	44.	Linda Robertson	Nursing
17.	K. Donohue	Nursing	45.	Dean Rodriguez	Dn of Admissn
18.	C. Ebrahimi	PACE Program	46.	Milagros Rohlado	Career Servs
19.	Nydia Edgecombe	Admissions	47.	Lilia Rosado	Counseling
20.	S. Figueroa	Secrtrl Science	48.	Dean Aida Ruiz	Academc Affrs
21.	Nelly Gonzalez	Counseling	49.	Felix Ruiz	Counseling
22.*	Ayleen Guzman	Children's Centr	50.	Victor Sierra	Biology
23.	Carol Hilliard	Nursing	51.	D. Singh	English
24.	Linda Hirsch	English	52.	C. Sotolongo	Coll Discvry
25.	Mary Joseph	Nursing	53.	Angela Thomas	Acad Advismt
26.	Thomas Joyce	Math	54.	Magda Vasillov	Performg Arts
27.	Jose Jusino	Student Govt	55.	Bowman Wiley	English
28.*	Leonidas Lopez	Phys Educ			

* Denotes pre-registrants who were unable to attend.

APPENDIX C

SEMINARS/WORKSHOPS MATERIALS DISTRIBUTED

		Page
College of Staten Island	January 22, 1991	32
Kingsborough Community College	April 16, 1991	36
Hostos Community College	June 12, 1991	39

The Graduate School and University Center
of The City University of New York

Center for Advanced Study in Education
Institute for Research and Development in Occupational Education
33 West 42 Street New York N.Y. 10036
212 642-2942 FAX 212 719-2488

TAKE-HOME RESOURCE MATERIALS KIT
FOR THE FACULTY WORKSHOP ON STRATEGIES FOR RETENTION
At The College of Staten Island on January 22, 1991

Resource Materials Kit

Booklets, Monographs & Papers:

Felder, Richard M., et. al., "Oh God, Not Another Teaching Workshop!," Engineering Education, ASEE, September/October 1989, pp. 622-624.

Parilla, Robert, Report on the National Science Foundation Workshop on Science, Engineering, and Mathematics Education in Two-Year Colleges, NSF, June 1989. (Executive Summary + a few pages enclosed)

Booklets, Monographs & Papers (Continued):

"Rethinking Services For Today's Underdeveloped College Students," Review, Vol. 1, No. 1, Higher Education Extension Service, Yale University, Winter 1989.

Odell, Morgan & Jere J. Mock (eds.), A Crucial Agenda: Making Colleges and Universities Work Better For Minority Students, WICHE, Boulder, Colorado, July 1989, 117 pp. (Contents + several pages enclosed)

Zinberg, Dorothy S., "The Next Generation of Engineers: A New Breed?," The Aspen Institute Quarterly, Spring 1990, pp. 50-57.

Cellucci, Philomena M. C. & Teresa P. Price, "IMPACT: A Map For Success. A High Risk Student Retention Plan," Report presented at AACJC Annual Convention, Dallas, Texas, April 1987, 77 pp. (Abstract + references enclosed)

Starks, Gretchen, "Retention of Adult Women Students in the Community College: Research Findings from Exceptional Case Studies," Paper presented at American Educational Research Association Annual Meeting, Washington, DC, April 1987, 13 pp. (Abstract + a few pages)

"Misconceptions Mar Campus Discussions of Student Retention," by Vincent Tinto, The Chronicle of Higher Education, September 6, 1989, p. B2.

Newspaper Articles, etc.:

"What's It Like To Be A Woman Engineer?" Engineering Education News, ASEE, December 1989, pp. 1, 3.

"Female Engineering Graduates Received Highest Salary Offers in 1990," Engineering Education News, ASEE, December 1990, p. 1.

"How Women and Men Experience College," Engineering Education, September/October 1990, p. 584.

"Blacks, Hispanics and Native Americans are Severely Underrepresented in the Engineering Profession," Manpower Comments, March 1989, pp. 15-16.

Kilborn, Peter T., "Youths Lacking Special Skills Find Jobs Leading Nowhere," The New York Times, November 27, 1990, pp. 1, B10.

"Wanted: 675,000 Future Scientists and Engineers," Science, Vol. 244, June 30, 1989, pp. 1536-1537.

"NSF Figures on Engineer Shortfall Questioned," Engineering Times, NSPE, January 1991, p.3.

Crutcher, Liz, "With Fewer Seen Climbing Engineering Ladder, Focus On Minorities Increases," Engineering Times, NSPE, pp. 1, 3.

Goleman, Daniel, "Probing School Success of Asian-Americans," The New York Times, pp. C1, C10.

Lee, Felicia R., "`Model Minority' : Label Taxes Asian Youth," The New York Times, March 20, 1990, pp. B1, B4.

Hechinger, Fred M., "About Education: Instead of Being a Crucible for Scientists, Introductory Courses Tend to Distill Them Out," The New York Times, May 9, 1990, p. B10.

Skoner, Peter R. & Mary R. Jalongo, "Retention Problems in Pre-Engineering Programs," Engineering Education, ASEE, April 1988, pp. 692-694.

Sanchez, Jose E., & Henry Ross, "To Keep Hispanic Students, Colleges Must Think Anew," The New York Times, May 13, 1990, p. 18 NJ.

"The Value of an Education," The New York Times, November 8, 1989, p. B 12.

"Uncle Sam Wants To Go Metric (by '92)," Engineering Times, NSPE, August 1989.

Weiss, Samuel, "CUNY Science Courses Teetering on Disaster," The New York Times, October 16, 1989.

"High School Math Strongly Linked To Minority Enrollment," Education Daily, September 24, 1990, p. 3.

Newspaper Articles, etc. (Continued):

Freedberg, Louis, "High School in West Brings College to Students," The New York Times, June 5, 1989, p. B6.

Chapple, Alan, "NSF, Escalante Team Up: Fast-Track Math & Science Rouses Inner-City Youth," Engineering Times, NSPE, August 1989, p. 5.

Goleman, Daniel, "Girls and Math: Is Biology Really Destiny?" The New York Times, August 2, 1987, p. 42-43 Educ.

Yarrow, Andrew L., "A Raft of Plans That Try to Dispel Math Anxieties," The New York Times, August 2, 1987, p. 43-44, 46 Educ.

Culliton, Barbara, "The Dismal State of Scientific Literacy," Science, Vol. 243, February 3, 1989, p. 600.

Hazen, Robert M. & James Trefil, "Quick! What's A Quark?" The New York Times Magazine, January 13, 1991, pp. 24-26.

Rothman, Robert, "Sciences Group Unveils Plan to Revise Curricula: Project 2061 Defines Core 'Literacy' Goals," Education Week, March 1, 1989.

"First Phase of Project 2061: Better Teaching of Core Science Ideas Advocated," Engineering Times, NSPE, April 1989, p. 10.

"Science For Girls," The Harvard Education Letter, May/June 1990, p.3

"Measuring the Interest in Science Majors," The New York Times, December 13, 1989, p. B 16.

Fiske, Edward B., "Lessons: With Paper, String and Ingenuity, An Engineer Teaches Students Science Through Experience," The New York Times, April 19, 1989, p. B9.

Fiske, Edward B., "How to Learn in College: Little Groups, Many Tests," The New York Times, March 5, 1990, pp. 1, B6.

Speakers' Handouts

Dr. Stan Brodsky:

Draft Document for Evaluation on Instructional & Departmental Strategies for Retention

Prof. Norman Metzger:

Random Thoughts on Power and Empowerment

Key Points on How to Deal With the New Breed of Employees

Keys to Empowering Employees

Giving Power Away to Strengthen Others

Traits of Successful Leaders

Successful Use of Power

Five Bases of Power

Dr. Lloyd M. Cooke:

Design For Excellence: How To Study Smartly, National Action Council for Minorities in Engineering, New York, 1986, 16 pp.

How To Study Smartly, 1987.

What Should Students Do On Their Own To Increase Chances To Complete Demanding Science & Technology Programs, December 1989, 3 pp

The Graduate School and University Center
of The City University of New York

Center for Advanced Study in Education
Institute for Research and Development in Occupational Education
33 West 42 Street, New York, N.Y. 10036
212 642 2942 FAX 212 719 2488

TAKE-HOME RESOURCE MATERIALS KIT
FOR THE FACULTY SEMINAR ON RETENTION OF WOMEN & MINORITIES
At Kingsborough Community College on April 16, 1991

Resource Materials Kit

Booklets, Monographs & Papers:

Felder, Richard M., et. al., "Oh God, Not Another Teaching Workshop!," Engineering Education, ASEE, September/October 1989, pp. 622-624.

Parilla, Robert, Report on the National Science Foundation Workshop on Science, Engineering, and Mathematics Education in Two-Year Colleges, NSF, June 1989. (Executive Summary + a few pages enclosed)

Booklets, Monographs & Papers (Continued):

"Rethinking Services For Today's Underdeveloped College Students," Review, Vol. 1, No. 1, Higher Education Extension Service, Yale University, Winter 1989.

Entry-Level Undergraduate Courses in Science, Mathematics and Engineering: An Investment in Human Resources, Sigma Xi, The Scientific Research Society, Research Triangle Park, North Carolina, January 1991. (Report of June 1990 Conference. Findings, Recommendations and Chapter on Faculty are enclosed.)

Odell, Morgan & Jere J. Mock (eds.), A Crucial Agenda: Making Colleges and Universities Work Better For Minority Students, WICHE, Boulder, Colorado, July 1989, 117 pp. (Contents + several pages enclosed)

Tips For Teachers: Bostian, Charles W. "The Mechanics of Effective Classroom Teaching"; Higgins, Ronald C. et. al. "Total Quality Management in the Classroom: Listen to Your Cunstomers"; Lewis, Richard B. "Creative Teaching and Learning in a Statics Class". Engineering Education, ASEE, January/February 1991, pp. 9-18.

Starks, Gretchen, "Retention of Adult Women Students in the Community College: Research Findings from Exceptional Case Studies," Paper presented at American Educational Research Association Annual Meeting, Washington, DC, April 1987, 13 pp. (Abstract + a few pages)

Tinto, Vincent "Misconceptions Mar Campus Discussions of Student Retention," The Chronicle of Higher Education, Sept 6, 1989, p. B2.

Newspaper Articles, etc.:

"What's It Like To Be A Woman Engineer?" Engineering Education News, ASEE, December 1989, pp. 1, 3.

"Female Engineering Graduates Received Highest Salary Offers in 1990," Engineering Education News, ASEE, December 1990, p. 1.

"How Women and Men Experience College," Engineering Education, September/October 1990, p. 584.

"Blacks, Hispanics and Native Americans are Severely Underrepresented in the Engineering Profession," Manpower Comments, March 1989, pp. 15-16.

Kilborn, Peter T., "Youths Lacking Special Skills Find Jobs Leading Nowhere," The New York Times, November 27, 1990, pp. 1, B10.

"Wanted: 675,000 Future Scientists and Engineers," Science, Vol. 244, June 30, 1989, pp. 1536-1537.

"NSF Figures on Engineer Shortfall Questioned," Engineering Times, NSPE, January 1991, p.3.

Crutcher, Liz, "With Fewer Seen Climbing Engineering Ladder, Focus On Minorities Increases," Engineering Times, NSPE, Dec 1990, pp. 1, 3.

Goleman, Daniel, "Probing School Success of Asian-Americans," The New York Times, pp. C1, C10.

Lee, Felicia R., "`Model Minority' Label Taxes Asian Youth," The New York Times, March 20, 1990, pp. B1, B4.

Hechinger, Fred M., "About Education: Instead of Being a Crucible for Scientists, Introductory Courses Tend to Distill Them Out," The New York Times, May 9, 1990, p. B10.

Skoner, Peter R. & Mary R. Jalongo, "Retention Problems in Pre-Engineering Programs," Engineering Education, ASEE, April 1988, pp. 692-694.

Sanchez, Jose E., & Henry Ross, "To Keep Hispanic Students, Colleges Must Think Anew," The New York Times, May 13, 1990, p. 18 NJ.

"The Value of an Education," The New York Times, November 8, 1989, p. B 12.

"Uncle Sam Wants To Go Metric (by '92)," Engineering Times, NSPE, August 1989.

Weiss, Samuel, "CUNY Science Courses Teetering on Disaster," The New York Times, October 16, 1989.

"High School Math Strongly Linked To Minority Enrollment," Education Daily, September 24, 1990, p. 3.

Newspaper Articles, etc. (Continued):

Freedberg, Louis, "High School in West Brings College to Students," The New York Times, June 5, 1989, p. B6.

Chapple, Alan, "NSF, Escalante Team Up: Fast-Track Math & Science Rouses Inner-City Youth," Engineering Times, NSPE, August 1989, p. 5.

Goleman, Daniel, "Girls and Math: Is Biology Really Destiny?" The New York Times, August 2, 1987, p. 42-43 Educ.

Yarrow, Andrew L., "A Raft of Plans That Try to Dispel Math Anxieties," The New York Times, August 2, 1987, p. 43-44, 46 Educ.

Culliton, Barbara, "The Dismal State of Scientific Literacy," Science, Vol. 243, February 3, 1989, p. 600.

Hazen, Robert M. & James Trefil, "Quick! What's A Quark?" The New York Times Magazine, January 13, 1991, pp. 24-26.

Rothman, Robert, "Sciences Group Unveils Plan to Revise Curricula: Project 2061 Defines Core `Literacy' Goals," Education Week, March 1, 1989.

"First Phase of Project 2061: Better Teaching of Core Science Ideas Advocated," Engineering Times, NSPE, April 1989, p. 10.

"Science For Girls," The Harvard Education Letter, May/June 1990, p.3

"Measuring the Interest in Science Majors," The New York Times, December 13, 1989, p. B 16.

Fiske, Edward B., "Lessons: With Paper, String and Ingenuity, An Engineer Teaches Students Science Through Experience," The New York Times, April 19, 1989, p. B9.

Fiske, Edward B., "How to Learn in College: Little Groups, Many Tests," The New York Times, March 5, 1990, pp. 1, B6.

Cooke, Lloyd M. Design For Excellence: How To Study Smartly, National Action Council for Minorities in Engineering, New York, 1986, 16 pp.

Cooke, Lloyd M. "What Should Students Do On Their Own To Increase Chances To Complete Demanding Science & Technology Programs," December 1989, 3 pp.

Tobias, Sheila They're Not Dumb, They're Different: Stalking The Second Tier, Research Corporation, Tucson, AZ, 1990.

The Graduate School and University Center
of The City University of New York

Center for Advanced Study in Education
Institute for Research and Development in Occupational Education
33 West 42 Street, New York, N.Y. 10036
212 642-2942 FAX 212 719-2488

TAKE-HOME RESOURCE MATERIALS KIT
FOR THE FACULTY SEMINAR ON RETENTION OF WOMEN & MINORITIES
At Eugenio Maria de Hostos Community College June, 1991

Resource Materials Kit

Booklets, Monographs & Papers:

Felder, Richard M., et. al., "Oh God, Not Another Teaching Workshop!," Engineering Education, ASEE, September/October 1989, pp. 622-624.

Parilla, Robert, Report on the National Science Foundation Workshop on Science, Engineering, and Mathematics Education in Two-Year Colleges, NSF, June 1989. (Executive Summary + a few pages enclosed)

Booklets, Monographs & Papers (Continued):

"Rethinking Services For Today's Underdeveloped College Students," Review, Vol. 1, No. 1, Higher Education Extension Service, Yale University, Winter 1989.

Entry-Level Undergraduate Courses in Science, Mathematics and Engineering: An Investment in Human Resources, Sigma Xi, The Scientific Research Society, Research Triangle Park, North Carolina, January 1991. (Report of June 1990 Conference. Findings, Recommendations and Chapter on Faculty are enclosed.)

Odell, Morgan & Jere J. Mock (eds.), A Crucial Agenda: Making Colleges and Universities Work Better For Minority Students, WICHE, Boulder, Colorado, July 1989, 117 pp. (Contents + several pages enclosed)

Tips For Teachers: Bostian, Charles W. "The Mechanics of Effective Classroom Teaching"; Higgins, Ronald C. et. al. "Total Quality Management in the Classroom: Listen to Your Cunstomers"; Lewis, Richard B. "Creative Teaching and Learning in a Statics Class". Engineering Education, ASEE, January/February 1991, pp. 9-18.

Starks, Gretchen, "Retention of Adult Women Students in the Community College: Research Findings from Exceptional Case Studies," Paper presented at American Educational Research Association Annual Meeting, Washington, DC, April 1987, 13 pp. (Abstract + a few pages)

Tinto, Vincent "Misconceptions Mar Campus Discussions of Student Retention," The Chronicle of Higher Education, Sept 6, 1989, p. B2.

Newspaper Articles, etc.:

"What's It Like To Be A Woman Engineer?" Engineering Education News, ASEE, December 1989, pp. 1, 3.

"Female Engineering Graduates Received Highest Salary Offers in 1990," Engineering Education News, ASEE, December 1990, p. 1.

"How Women and Men Experience College," Engineering Education, September/October 1990, p. 584.

"Blacks, Hispanics and Native Americans are Severely Underrepresented in the Engineering Profession," Manpower Comments, March 1989, pp. 15-16.

Kilborn, Peter T., "Youths Lacking Special Skills Find Jobs Leading Nowhere," The New York Times, November 27, 1990, pp. 1, B10.

"Wanted: 675,000 Future Scientists and Engineers," Science, Vol. 244, June 30, 1989, pp. 1536-1537.

"NSF Figures on Engineer Shortfall Questioned," Engineering Times, NSPE, January 1991, p.3.

Crutcher, Liz, "With Fewer Seen Climbing Engineering Ladder, Focus On Minorities Increases," Engineering Times, NSPE, Dec 1990, pp. 1, 3.

Goleman, Daniel, "Probing School Success of Asian-Americans," The New York Times, pp. C1, C10.

Lee, Felicia R., "'Model Minority' Label Taxes Asian Youth," The New York Times, March 20, 1990, pp. B1, B4.

Hechinger, Fred M., "About Education: Instead of Being a Crucible for Scientists, Introductory Courses Tend to Distill Them Out," The New York Times, May 9, 1990, p. B10.

Skoner, Peter R. & Mary R. Jalongo, "Retention Problems in Pre-Engineering Programs," Engineering Education, ASEE, April 1988, pp. 692-694.

Sanchez, Jose E., & Henry Ross, "To Keep Hispanic Students, Colleges Must Think Anew," The New York Times, May 13, 1990, p. 18 NJ.

"The Value of an Education," The New York Times, November 8, 1989, p. B 12.

"Uncle Sam Wants To Go Metric (by '92)," Engineering Times, NSPE, August 1989.

Weiss, Samuel, "CUNY Science Courses Teetering on Disaster," The New York Times, October 16, 1989.

"High School Math Strongly Linked To Minority Enrollment," Education Daily, September 24, 1990, p. 3.

Newspaper Articles, etc. (Continued):

Freedberg, Louis, "High School in West Brings College to Students," The New York Times, June 5, 1989, p. B6.

Chapple, Alan, "NSF, Escalante Team Up: Fast-Track Math & Science Rouses Inner-City Youth," Engineering Times, NSPE, August 1989, p. 5.

Goleman, Daniel, "Girls and Math: Is Biology Really Destiny?" The New York Times, August 2, 1987, p. 42-43 Educ.

Yarrow, Andrew L., "A Raft of Plans That Try to Dispel Math Anxieties," The New York Times, August 2, 1987, p. 43-44, 46 Educ.

Culliton, Barbara, "The Dismal State of Scientific Literacy," Science, Vol. 243, February 3, 1989, p. 600.

Hazen, Robert M. & James Trefil, "Quick! What's A Quark?" The New York Times Magazine, January 13, 1991, pp. 24-26.

Rothman, Robert, "Sciences Group Unveils Plan to Revise Curricula: Project 2061 Defines Core `Literacy' Goals," Education Week, March 1, 1989.

"First Phase of Project 2061: Better Teaching of Core Science Ideas Advocated," Engineering Times, NSPE, April 1989, p. 10.

"Science For Girls," The Harvard Education Letter, May/June 1990, p.3

"Measuring the Interest in Science Majors," The New York Times, December 13, 1989, p. B 16.

Fiske, Edward B., "Lessons: With Paper, String and Ingenuity, An Engineer Teaches Students Science Through Experience," The New York Times, April 19, 1989, p. B9.

Fiske, Edward B., "How to Learn in College: Little Groups, Many Tests," The New York Times, March 5, 1990, pp. 1, B6.

Cooke, Lloyd M. Design For Excellence: How To Study Smartly, National Action Council for Minorities in Engineering, New York, 1986, 16 pp.

Cooke, Lloyd M. "What Should Students Do On Their Own To Increase Chances To Complete Demanding Science & Technology Programs," December 1989, 3 pp.

Tobias, Sheila They're Not Dumb, They're Different: Stalking The Second Tier, Research Corporation, Tucson, AZ, 1990.

APPENDIX D

SEMINARS/WORKSHOPS SELECTED SUMMARIES OF PRESENTATIONS

		Page
College of Staten Island	January 22, 1991	
"From Control to Commitment: Another view of Retention" by Prof. Norman Metzger		44
Kingsborough Community College	April 16, 1991	
"The Teaching Faculty's Role in Retention" by Dr. Eleanor Baum		45
"Science & Technology Studies: Strategies for Inclusion, Not Exclusion" by Dr. Cecily Cannan Selby		47
Hostos Community College	June 12, 1991	
"Triple S: A Retention Program Coupled with High Standards" by Dr. Lester Jones		49

SUMMARY OF PRESENTATION BY PROF. NORMAN METZGER
AT THE COLLEGE OF STATEN ISLAND, JANUARY 22, 1991

"From Control to Commitment: Another View of Retention"

Prof. Metzger defined retention as the result of nurturing precious resources. He used several illustrative comments to bring home his point.

He cited a Chinese proverb -- If you want 1 year of prosperity, grow grain; if you want 10 years of prosperity, grow trees; if you want 100 years of prosperity, grow people! He pointed out that when you pay attention to people, they respond (Hawthorne effect). That is, people who are treated with dignity are likely to be more productive, while an alienated individual feels that no matter what I do it will have no impact on the outcome.

He also noted that it is good management practice to "catch somebody doing something right," to say "Thank you", and to get off people's backs. His main message was "Caring Still Counts" and that this applies to the classroom equally as well as to the workplace.

SUMMARY OF PRESENTATION BY DR. ELEANOR BAUM
AT KINGSBOROUGH COMMUNITY COLLEGE, APRIL 16, 1991

"The Teaching Faculty's Role in Retention"

Dr. Baum related how she had become interested in studying engineering and how that experience had reinforced her concerns about underrepresented populations in science and engineering.

She addressed her topic by underscoring the importance of acknowledgement by the president and other senior institutional officials of the problem of retention, of a commitment to attack the problem, and a willingness to provide adequate resources and funds. In addition, an institutional reward system for faculty involved in retention programs which affects such personnel actions as reappointment, tenure, and promotion can encourage faculty support and involvement.

Instructional departments and individual faculty members can improve retention of their students with a variety of strategies which Dr. Baum presented. Departments can create a nurturing environment in and out of class and make retention a priority for the departmental faculty and staff as a group.

Individual teachers can have positive effects on retention by applying selective combinations of the following strategies.

1) Encouraging students to set high goals and standards for themselves and help students achieve them.

2) Facilitating group work by students. Dr. Baum cited the work of Uri Threisman at the University of California, Berkeley and of Ray

Landis at U.C.L.A.

3) Assigning "good" homework; carefully selected and promptly reviewed and explained.

4) Using frequent testing with quick return and discussion of problems and errors.

5) Being alert to students having difficulties beyond the scope of the class and referring them to the appropriate service and following up to be sure that the problem is being addresssed. Early help and follow-up often prevents more serious problems.

6) Noting that research has shown that if one faculty member gets to know a student and follows that student closely as a mentor, retention and academic success is more likely. Upperclass students and alumni mentors are also very valuable in helping students succeed.

7) Inviting role models into class. Dr. Baum emphasizes that women role models should be seen as such by all students, not just women students -- similarly, ethnic role models should be shared by all students.

8) Being aware of students sensitivities. Injecting humor in class is fine, but avoid racist and sexist jokes.

Dr. Baum closed by recommending that the participants review Dr. Brodsky's document on Strategies for Retention for additonal ideas.

SUMMARY OF PRESENTATION BY DR. CECILY CANNAN SELBY
AT KINGSBOROUGH COMMUNITY COLLEGE, APRIL 16, 1991

"Science & Technology Studies:
Strategies for Inclusion, Not Exclusion"

Dr. Selby reviewed the nation's post-Sputnik goals through the 70's which emphasized high school math and science curricula for a few of the best and brightest as a first step toward the PhD. The attitudes that governed that period were summarized as 1) scientists are born, not made, 2) science provides a superior way of solving problems of all kinds, 3) the scientific method's strict rules and procedures are the most effective way to solve problems, and 4) technology is applied science. The results of these attitudes were 1) the numbers studying science was reduced, 2) most students were turned off by the way science was being presented, 3) women and minorities demonstrated the most acute turn off and underrepresentation among advanced science students, and 4) non-science graduates were unprepared for the science-technology workplace.

Today's new conditions of international competition, rapidly changing workplace requirements, declining interest in science and technology by white males, and forecast demographic changes in the available workforce will require new goals. The NSF, among others, has launched an effort to increase the pool of women and minorities in the science and technology workforce and to increase scientific literacy among the nation's citizens.

New governing attitudes are needed. These should include 1) scientists can be made, 2) the US needs all the talent available at all levels, 3) the understandings of science are in flux, they are

not fixed, science is falsifiable, 4) science belongs to all cultures and needs all cultures, and 5) technology may spring from applied science but might also result from other needs.

New strategies are needed such as 1) integrating the study of technology with the study of humanity, including why and how people make things, their values in determining their creations, their choices and trade-offs, and the social factors in innovation, 2) study science as the way to explore why things people make look and act as they do and as one way of knowing, 3) emphasize the falsifiability and the aesthetic nature of science, 4) include traditionally female and other cultural technologies in examples, 5) use bias-free and multi-cultural metaphors and analogies in teaching, and 6) emphasize the empowerment implicit in using mathematics confidently, in designing and making technologies and in asking truly scientific questions.

SUMMARY OF PRESENTATION BY DR. LESTER JONES
AT HOSTOS COMMUNITY COLLEGE, JUNE 12, 1991

"Triple S: A Retention Program Coupled With High Academic Standards"

Dr. Lester Jones described elements of Xavier University's retention program which has achieved national recognition for its effectiveness. He supported his presentation with a variety of overhead transparencies and handouts. He gave an overview of the institution and its programs as well as its structured developmental program which is required of all entering students with less than junior status. This includes math, English, reading, and speech placements based on test results. The enrollment, which is close to 3,000, includes about 90% Black students and the faculty is 40% Black. While this is a catholic institution, half of the faculty and about half of the students are non-catholic. Some 60% of the students are in science programs and the institution ranks first nationally in placing Blacks into Pharmacy and second nationally in placing Blacks into medical school.

Dr. Jones discussed several programatic mechanisms which relate to outcomes at Xavier. A Science Education Reseearch Group (SERG) was established wherein all science faculty and administrators are invited to meet weekly for one hour to share ideas about helping students and become a peer support group. One outcome of SERG was the establishment of an intensive four week summer program for high school students called SOAR (Stress on Analytical Reasoning). SOAR is based on 5 components; Piagetian inquiry-based labs, Whimbey (intelligence can be taught) problem-solving to improve test

performance, vocabulary building, group competition, and motivational science-related activities. The focus is on how new concepts are learned and application of concepts to problems. He described learning cycle labs in which student groups are involved in three phases; exploration, invention, and application, followed by pictorial representation. Individuals in small groups all receive the lowest grade of any group member. SOAR has now been divided into two parts, SOAR I which uses Biology, Physics and Chemistry in 4-day cycles each and SOAR II which treats Chemistry, Physics and Math similarly.

Outcomes show that students with low aptitudes improve by an average of 120 points on the SAT and students with low reading skills improve by more than 2 years in both composition and vocabulary in the 4 week period. SOAR students are also twice as likely to persist as Bio-Chem majors as other freshmen and are more likely to be admitted to medical and dental schools than others.

The Xavier philosophy in the sciences applies Triple S, Standards with Sympathy in the Sciences. This involves setting high academic expectations with lots of supports at the freshman level and decreasing support as the student progresses so that graduates can cope with other institutions which do not provide much support. Science courses at Xavier are standard in basic content and several advantages of this arrangement were cited.

Dr. Jones invited Hostos personnel to visit Xavier University for an in-depth experience in how these activities work.

APPENDIX E

SEMINARS/WORKSHOPS PROGRAMS

		Page
College of Staten Island	January 22, 1991	53
Kingsborough Community College	April 16, 1991	55
Hostos Community College	June 12, 1991	57

This Workshop is part of a project funded by the New York State Education Department Under The Carl D. Perkins Vocational Education Act (VEA No. 152-91-1913), Dr. Stan Brodsky, Project Director, Center For Advanced Study in Education, City University Of New York Graduate School; (212) 642-2938

Dr. Richard Resch
Dean of Science & Technology
The College of Staten Island
130 Stuyvesant Place
Staten Island, New York 10301

THE CITY UNIVERSITY OF NEW YORK
The College of Staten Island

A WORKSHOP FOR FACULTY
ON

STRATEGIES FOR RETENTION

TUESDAY, JANUARY 22, 1991
AT

CSI STUDENT LOUNGE
ADMINISTRATION BUILDING
A112 (STAFF & FACULTY LOUNGE)
SUNNYSIDE CAMPUS
STATEN ISLAND, NY

A FACULTY WORKSHOP

STRATEGIES FOR RETENTION

PURPOSES

To present up to date information, techniques and useful strategies to improve retention of students and staff. In addition, participants will have opportunities to share experiences and will be encouraged to plan new or enhanced local projects related to retention.

WHO SHOULD ATTEND

Teaching faculty, department chairs, counselors and administrators who are involved in the education of science, health and engineering technology students will find this workshop of value in their professional work. Those engaged directly in retention activities or policy formulation will benefit by hearing others experiences as well as contributing their own expertise.

RESOURCE MATERIALS

Kits of selected resource materials will be distributed to the participants.

PROGRAM

Tuesday, January 22, 1991

9:30 AM Registration

9:45 AM Welcome and Introductions

Dr. Richard Resch
Dean of Science and Technology
The College of Staten Island

Dr. Stan Brodsky, PE
Director, New Project Development
CASE/CUNY Graduate School

10:00 AM "The Teacher's Role in Retention"

Dr. Eleanor Baum
Dean of Engineering
The Cooper Union

Discussion

10:45 AM Refreshment Break

11:15 AM "From Control to Commitment: Another View of Retention"

Norman Metzger
Edmond A. Guggenheim Professor of Health Care Management Emeritus
Mount Sinai School of Medicine

Discussion

12:00 Noon Workshop Lunch--Small Groups

1:30 PM "Design for Retention: Helping Students Study Smartly"

Dr. Lloyd M. Cooke
President, LMC Associates

Discussion

2:15 PM Summary and Follow-up

Dr. Stan Brodsky

Dr. Richard Resch

Dr. Elsa Nunez-Wormack
Associate Dean for Freshman Programs

3:00 PM Adjournment

XEROX ADDITIONAL FORMS NEEDED

TEAR HERE AND RETURN

REGISTRATION FORM

PLEASE REGISTER EARLY — THERE ARE NO FEES

☐ PLEASE RESERVE A PLACE FOR ME AT THE RETENTION WORKSHOP

NAME _____

TITLE _____

DEPT. OR OFFICE _____

INSTITUTION _____

PHONE _____

RETURN THIS FORM TO:

DEAN RICHARD RESCH
DIVISION OF SCIENCE & TECHNOLOGY
CSI—ST. GEORGE CAMPUS
130 STUYVESANT PLACE
STATEN ISLAND, NY 10301

OR CALL

(718) 390-7925

This Workshop is part of a project funded by the New York State Education Department under The Carl D. Perkins Vocational Education Act (VEA No. 152-91-1913), Dr. Stan Brodsky, Project Director, Center for Advanced Study in Education, City University of New York Graduate School; (212) 642-2938

RETENTION of WOMEN & MINORITIES

A Seminar for

FACULTY

COUNSELORS

ADMINISTRATORS

Tuesday, April 16, 1991

1 PM to 4 PM

Room U218

Kingsborough Community College
of the City University of New York
2001 Oriental Boulevard
Manhattan Beach, Brooklyn, New York

A Seminar on

RETENTION OF WOMEN & MINORITIES

This seminar will focus on retention strategies which have been found to be effective with associate degree students. While there will be an emphasis on special populations in science and engineering-related programs, most strategies will be valid for all students.

PROGRAM

1 PM **Opening Remarks**
Dean Thelma Malle
Dean for Open Admissions & Special Programs
Kingsborough Community College

Introduction
Dr. Stan Brodsky
Director, New Project Development
Center for Advanced Study in Education
CUNY Graduate School

1:15 PM **"The Teaching Faculty's Role in Retention"**
Dr. Eleanor Baum
Dean of Engineering
The Cooper Union for the Advancement of Science and Art

2 PM **Refreshment Break**

2:15 PM **"Science & Technology Studies: Strategies for Inclusion, Not Exclusion"**
Dr. Cecily Cannan Selby
Professor, Science Education
New York University

3 PM **Student/Alumni Panel**
Participants to be announced

3:45 PM **Summary & Evaluation**

4 PM **Adjournment**

Please Tear Here, Complete and Return — *Xerox Additional Forms as Needed*

REGISTRATION FORM

PLEASE REGISTER EARLY — THERE ARE NO FEES

☐ **Please reserve a place for me at the Retention Seminar**

NAME *(Please Print)*

TITLE

DEPT OR OFFICE

INSTITUTION

PHONE

RETURN THIS FORM TO:
Loretta DiLorenzo
Office of the Provost
Room A218
Kingsborough Community College
2001 Oriental Boulevard
Manhattan Beach, Brooklyn, New York 11235

OR CALL:
(718) 368-5328

Hostos Community College
Seminar Planning Committee:

Dr. Peter Castillo, Chair
Dr. Joseph Corrigan
Dr. Victor DeLeon
Prof. Thomas Joyce
Dr. Gerald Meyers
Dean Aida Ortiz-Ruiz
Ms. Angela Thomas

-57-

This Workshop is part of a project funded by the New York State Educational Department under The Carl D. Perkins Vocational Education Act (VEA No. 152-91-1913), Dr. Stan Brodsky, Project Director, Center for Advanced Study in Education, City University of New York Graduate School; (212) 642-2938

STRATEGIES FOR STUDENT RETENTION

A Seminar for

FACULTY

COUNSELORS

ADMINISTRATORS

Wednesday, June 12, 1991
9 AM to 1:30 PM
Room B206R

Eugenio Maria De Hostos Community College
500 Grand Concourse
Bronx, New York 10451

A Seminar on

RETENTION OF WOMEN & MINORITIES

This seminar will focus on retention strategies which have been found to be effective with associate degree students. While there will be an emphasis on special populations in science and engineering-related programs, most strategies will be valid for all students.

PROGRAM

9:00 AM **Registration & Refreshments**

9:30 AM **Welcoming Remarks**
President Isaura Santiago Santiago

Introductions
Dean Eugene Barrios
Dean of Academic Affairs

10:00 AM **"Retention Programs Actual & Potential"**
Dr. Alberto Guzman
Associate Professor of Mathematics &
Director, Resource Center for Science & Engineering
The City College of CUNY

10:45 AM **"Triple S: A Retention Program Coupled with High Academic Standards"**
Dr. Lester Jones
Professor of Mathematics
Xavier University

11:30 AM **Student/Alumni Panel**
(Participants to be announced)

12:15 PM **Seminar Luncheon & Small Group Session**

1:00 PM **Summary & Evaluation**
Dr. Stan Brodsky
CASE/CUNY

BEST COPY AVAILABLE

Please Tear Here, Complete and Return — *Xerox Additional Forms as Needed*

REGISTRATION FORM

PLEASE REGISTER EARLY — THERE ARE NO FEES

☐ **Please reserve a place for me at the Retention Seminar**

NAME *(Please Print)*

TITLE

DEPT OR OFFICE

INSTITUTION

PHONE

RETURN THIS FORM TO:
Dr. Peter Castillo
Natural Sciences Dept.
Room A507
Hostos Community College
475 Grand Concourse
Bronx, New York 10451

OR CALL:
(212) 518-4129